Amendments to the Specification

Please add the following paragraph before the first paragraph beginning at page 1, line 1:

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. provisional application serial no. 60/438,221 filed January 6, 2003, which is incorporated herein by reference.

Please replace the first full paragraph on page 3 with the following paragraph:

Typically, an object **22** to be imaged is injected with one or more radiopharmaceutical or radioisotopes and placed in the examination region **16**. The presence of these pharmaceuticals within the object **22** produces emission radiation from the object. Radiation traveling along a trajectory defined by a collimator **24** is detected by the detector heads **14**. The detector heads are angularly indexed or rotated around the examination region to collect the emission data from a plurality of directions. The projection emission data (x, y, z) and an angular position (θ) of the detector head around the examination region are stored in a data storage ~~24~~**26**. A reconstruction processor **28** processes the event and detector orientation data from the data storage **26** into a volumetric image representation. The image representation is then stored at a volume image memory **30** for manipulation by a video processor **32** and display on an image display **34** such as a video monitor, printer, or the like.

Please replace the third full paragraph on page 3 with the following paragraph:

During a precalibration operation, the detector face is irradiated with a uniform flood field. With a uniform flood of radiation, all detectors of the array should have the same number of counts and the events should be of consistent amplitude. A control circuit or processor **44** monitors the output of each detector element, either directly or by reading the ~~memory~~data storage **26** to see if each has substantially the same number of counts and substantially the same energy distribution. If any of the detectors differ from the others by more than a preselected deviation, the control processor **44** causes a switching means **46** to delete signals form the malfunctioning elements or causes the preamplifiers **40** to disconnect the malfunctioning elements (e.g., pixel **P0**) from the analog-to-digital converter **42**. The control processor **44** also causes the outputs of a plurality of nearest

neighbors or other contributing pixels (e.g., pixels **P1-P8**) to be sent both to ~~memory~~data storage **26** and an event generation circuit **48**. The output of the event generation circuit **48** is connected with the data ~~memory~~data storage **26** to supply (x, y, z) radiation events for the malfunctioning elements in accordance with events received by the contributing pixels.

Please replace the last paragraph on page 3 with the following paragraph:

With reference to FIGURE 3, the event generator **48** of the preferred embodiment includes an input **50** in which events from each contributing pixel, e.g., the nearest neighbor pixels (**P1-P8**) are received. Each time an event is received on one of the contributing pixel inputs, a look-up and compare circuit **52** looks at a corresponding pixel table **54** and determines whether the contributing pixel at which an event occurred corresponds to a table position which has a token **56**. By way of example, if the token **56** is in table position **P1** corresponding to nearest neighbor **P1**, then when an input event is received from the pixel **P1**, the look-up and compare circuit **52** produces an output indicative of a received event at position **P0**. The back-up and compare circuit **52** further enables a token passing control circuit **58** to cause the table location **P1** to pass the token to one of table locations **P2-P8** corresponding to the other contributing pixels. Although the token may be passed among the table locations in order, it is preferred that it be passed randomly such as by random number generator **62**. In this manner, if there are eight contributing pixels, approximately $1/8^{th}$ of the events occurring at each of the contributing pixels will be credited not only to the contributing pixel location, but also to the location of the defective pixel.

Please replace the first full paragraph on page 4 with the following paragraph:

In one embodiment, the energy of the contributing pixel event is passed to the data memory as the energy of the event at **P0**. However, it is preferred that an energy circuit **60** replace the actual energy of the shared event with an average expected energy of the injected radioisotope. More specifically, the energy of the events is generally distributed over a bell-shaped curve. A dither circuit ~~62~~**60** preferably oscillates the energy along the bell-shaped curve to create a more typical energy distribution. In one embodiment, the dithering circuit ~~62~~**60** deletes **70** the least significant bits of the energy value from the contributing pixel, e.g., the three least significant bits. The dithering circuit **60** includes a

random number generator **72** for generating random values for the detected least significant bits which replace **74** the deleted bits.